

**ABSTRACT**

**PASSIVE POLARIZATION STABILIZER**

5           In an interferometer configuration, a retarder in the form of a half-wave plate  
(125) and a phase shifter in the form of a glass plate (120) are arranged in one arm  
(114). The phase shifter provides an optical path difference between the  
interferometer arms which needs to be greater than the coherence length of the input  
light to be polarization stabilized. A polarizer in the form of a linear polarizer (118)  
10 aligned at  $45^\circ$  to the half-wave plate is arranged across both interferometer arms (114  
& 116). Polarization stabilization action is achieved by the retarder in combination  
with the polarizer. More specifically, for at least one input polarization state, the  
polarization states in the two interferometer arms are rendered orthogonal by the  
retarder, the polarizer being aligned to allow only one of the two orthogonal states to  
15 be transmitted, the other being absorbed. The device is expected to find application  
for WDM networks based on broadband sources, such as superluminescent diodes.  
The device is also expected to be useful for providing a front-end polarization  
stabilization of the signal supplied to optical elements that are sensitive to the  
polarization state of their input. Examples of such elements are semiconductor optical  
20 amplifiers, integrated optical splitters and electro-optical switches.

Figure 2